

category, may make the division of labour in a small hospital a formidable task for the matron's office. This experiment was made possible by an imaginative housekeeping scheme sponsored by the King Edward Hospital Fund, which could be adopted more widely, particularly in the design of new hospitals.

## Survival in Cold Water

In recent years the increased interest in small boat sailing and inshore recreational activities, as well as a number of major disasters at sea, have drawn attention to the need for all concerned to be familiar with the basic problems of survival in the water. Unless a man is supported by some buoyant object—ideally a life jacket—and is quickly picked up or reaches shore, he will drown. Though ability to swim well improves the chances of survival, Dr. W. R. Keatinge and his colleagues rightly point out in their paper at page 480 of the *B.M.J.* this week that swimming in cold water may indeed lessen the chances of survival. L. G. C. Pugh and O. D. Edholm<sup>1</sup> have reported that a relatively thin man could lose heat more rapidly if he swam than if he kept still supported by a life jacket, and Keatinge emphasized the role of hypothermia in causing death when the *Lakonia* was abandoned at sea.<sup>2</sup>

The present teaching is that people who are thrown into water should stay put until picked up, provided they have adequate support such as a life jacket or floating wreckage. Swimming should be strictly limited to reaching nearby objects such as rafts. Further advice to people about to leave a sinking ship or who are sailing a small boat with a risk of capsizing is that they should put on as much clothing as possible or wear accepted survival suits. This need is second only to the use of an approved life jacket. The findings in the present paper by Dr. Keatinge and his colleagues fully support this teaching. It is significant that the subjects of the experiments were clothed, and that the cold water in which they were immersed was at 4.7° C. (40° F.), close to that encountered round the British Isles in the winter months. The breathlessness caused by sudden immersion in cold water is well known, but it is believed that this is the first attempt to measure it, and the degree to which it occurs is remarkable. Hypothermia has always been regarded as a major hazard for the survivor in cold water. G. R. Hervey<sup>3</sup> has stated that a lightly clothed man will not live more than 15 minutes at 0° C. (32° F.) and cannot maintain heat balance below 20° C. (68° F.). It is apparent from this new work that respiratory distress in a swimmer may shorten this period.

Cases of sudden death on immersion in cold water have occasionally been reported as due to reflexly induced cardiac arrhythmias. The death is too sudden to be due to the inhalation of water, but clearly this is an additional factor in the causation of drowning. Though work in this field is likely to be limited because of the slight risk of cardiac failure on cold immersion the further study of the respiratory effects does deserve cautious investigation. The present paper is particularly welcome not only for its contribution to the study of survival but for its forthright emphasis on "the need for the occupants of small boats to wear a life jacket capable of keeping the face above water, and the danger in trying to swim even short distances to shore in cold water without one."

## Starving the Premature

In many aspects of the management of newborn premature babies there is scope for clinical impressions. Scientific comparison of different methods of preventing the respiratory distress syndrome, of treating anoxia, or of deciding on the choice of food is beset by difficulties. There are still doctors who remain unconvinced that there is nothing to choose between the various dried foods except in price, some favouring one and some another. Some doctors still believe that there is a real danger of overfeeding full term babies, apparently because they think that human beings, unlike lambs, calves, and other animals, do not know when to stop.

It is difficult to find suitable variables which enable valid comparisons of different foods to be made. Having chosen a large number of premature babies of comparable birth weight, sex, and duration of gestation, with similar maternal causes for premature delivery, one could compare the overall survival rate, the morbidity, the gain in weight, and the incidence of vomiting, feeding problems, and oedema. Each of these presents difficulties. For instance, the survival rate depends on many factors unconnected with feeding, and different centres have different criteria for defining a live-born premature baby. Gain in weight may be confused by the presence of oedema. Few have time to record accurately the incidence of vomiting and other feeding difficulties.

There are similar problems with regard to the time at which feeding of the premature baby should commence, but more accurate tests are available in this field. The survival rate of premature babies is a poor criterion, for the quality of the survivors is what matters. Hypoglycaemia and hyperbilirubinaemia damage the brain, and it may not be possible to assess that damage until well into school age. Hence in the early or late feeding controversy the blood glucose and the serum bilirubin levels are useful data when comparing one method of feeding with another. Other useful data include the presence of acidosis or ketonuria, and perhaps the response to glucagon or adrenaline.

A. Ylppö of Finland,<sup>1,2</sup> the doyen of Finnish paediatrics, has long advocated early feeding; and since Finland has almost the lowest infant mortality in the world (14 per 1,000 live births) it is unlikely that his methods were far wrong. He showed that starvation led to acidosis, undue weight loss, and haemorrhages in the gastric mucosa. He advocated feeding the premature baby with 5% glucose on the first day and glucose and breast milk on the second day. Clement Smith, of Boston,<sup>3</sup> wrote in a discussion of Ylppö's work that "this brief résumé must close with the confession that to be on the other side of any argument from that held by Professor Ylppö gives one a sense of vague uneasiness." Yet he

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<sup>3</sup> Smith, C. A., *Ann. Paediat. Fenn.*, 1957, 3, 261.

<sup>4</sup> Corner, B. D., *Lancet*, 1962, 1, 321.

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<sup>9</sup> Wennberg, R. P., Schwartz, R., and Sweet, A. Y., *J. Pediat.*, 1966, 68, 860.

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<sup>11</sup> Rabor, I. I., Oh, W., Wu, P. Y. K., Metcalf, J., Vaughn, M. A., and Gabler, M., *Pediatrics*, 1968, 42, 261.

<sup>12</sup> Creery, R. D. G., *Develop. Med. Child Neurol.*, 1966, 8, 746.

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<sup>15</sup> Wharton, B. A., and Bower, B. D., *Lancet*, 1965, 2, 969.

<sup>1</sup> Pugh, L. G. C., and Edholm, O. D., *Lancet*, 1955, 2, 761.

<sup>2</sup> Keatinge, W. R., *Brit. med. J.*, 1965, 2, 1537.

<sup>3</sup> Hervey, G. R., *Science News*, 1955, No. 38, p. 72.